2022 Arkansas Engineering Forum & Southeast Symposium on Contemporary Engineering Topics (SSCET)

September 16, 2022 at UA Little Rock

THANK YOU FOR THE GENEROUS SUPPORT FROM OUR SPONSORS:

2022 SSCET & AEF Main Schedule

Friday, September 16th, 2022

7:00 AM	Registration and Breakfast			EIT Lobby
8:00 AM	Welcome	Ann Bain	Provost, UALR	EIT Auditorium
8:15 AM	Keynote	Antoine Lucas	Vice-President of Engineering, Southwest Power Pool	EIT Auditorium
8:40 AM	Program Schedule, Logistics & Session Chair Introductions			EIT Auditorium
9:00 AM	Morning Symposium Tracks			*See Attached Details*
10:30 AM	Break and Student Posters			EIT Emerging Analytics Center (4th Floor)
10:45 AM	Track Breakouts			*See Attached Details*
12:15 PM	Lunch Banquet & Keynote Speaker: Buddy Hasten, President & CEO at Arkansas Electric Cooperative Corporation			Ledbetter Room (See Attached Map)
1:45 PM	Afternoon Symposium Tracks			*See Attached Details*
3:15 PM	Break, Student Posters, and VR Cave Demo			EIT Emerging Analytics Center (4th Floor)
3:30 PM	Track Breakouts			*See Attached Details*
5:00 PM	Adjourn			

For PDH completion certificates, checkmark each session you attend, sign your name on the 2nd to the last page, and turn in this agenda to the welcome desk at the end of the day. The certificate will be emailed to the address provided with your registration.

The student poster session will take place in the 4th-floor hallway. Judging will occur between 10:15 AM and 11:00 AM. Students, please stay by your posters during the judging and afternoon break.

Students: Please drop off your resumes at the check-in table by 8:30 AM. Reviewers will pick up resumes between 8:30 and 9:00 AM and return before 3:30 PM. Then students may pick up their resumes between 3:30 PM and 4:00 PM.
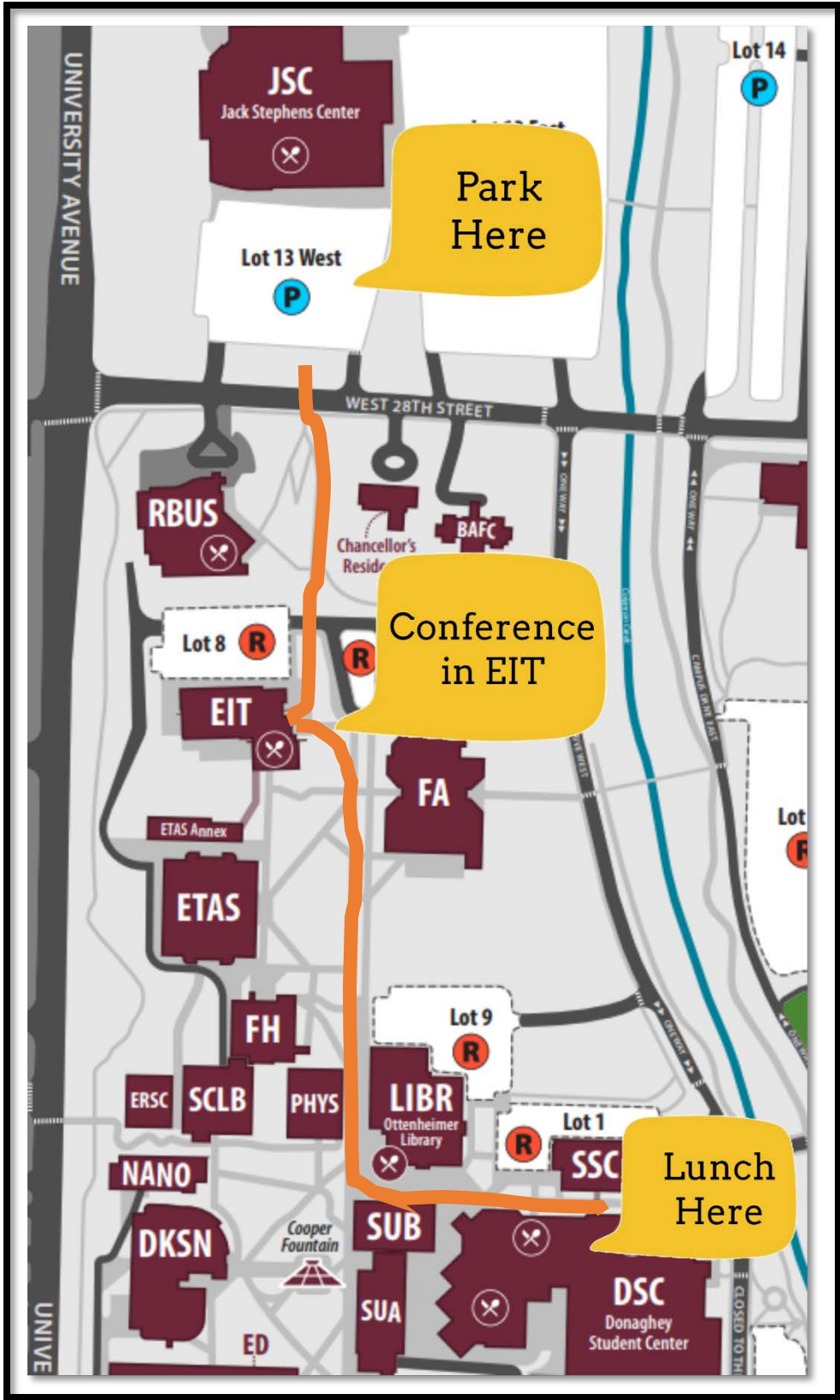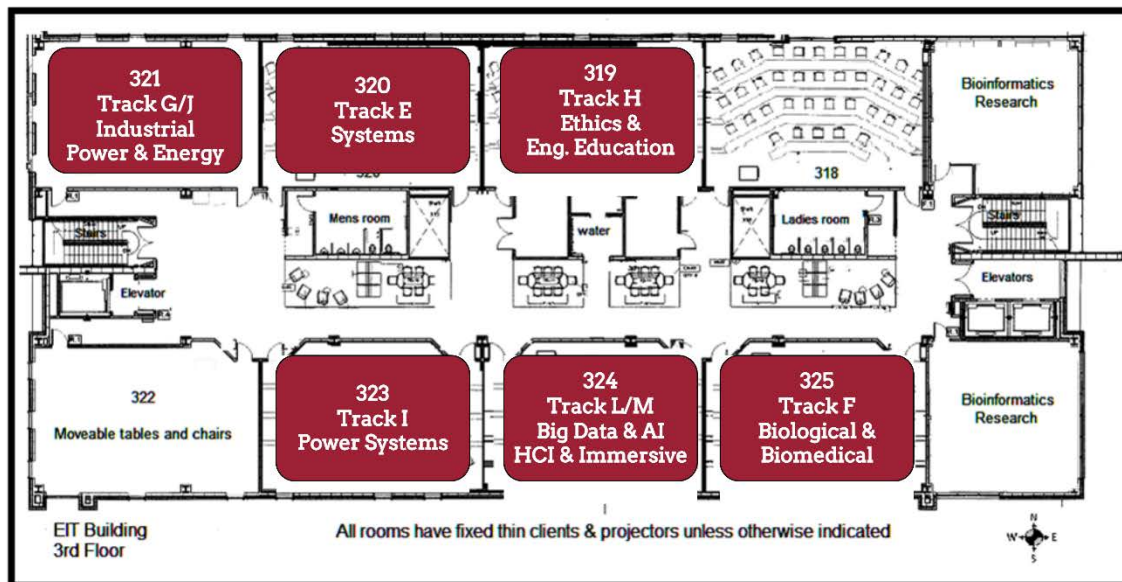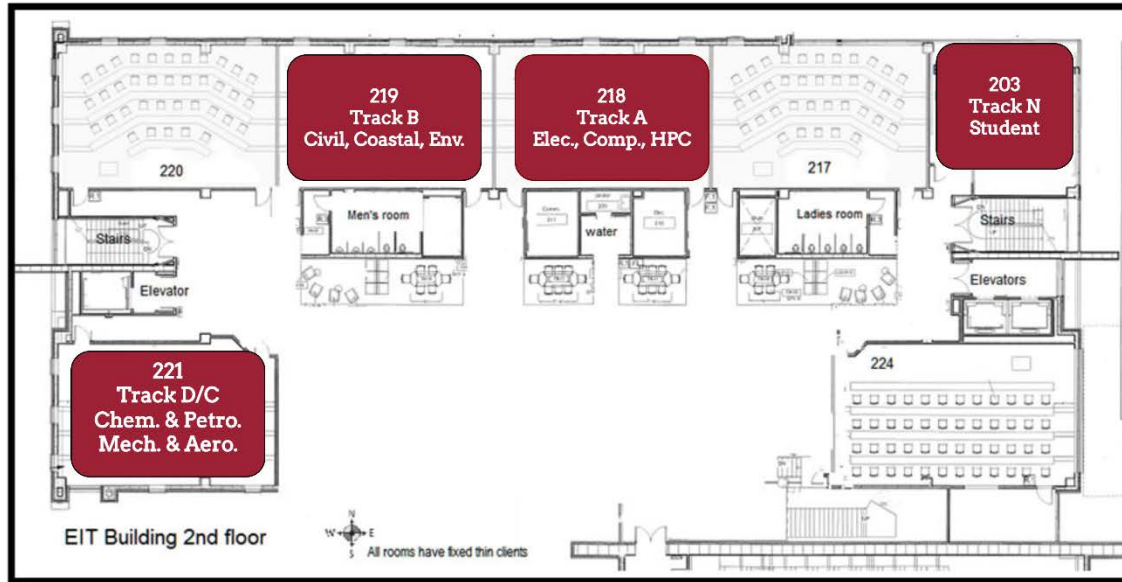
Track K: Cybersecurity *is being held in room 417. Follow signs on the 4th floor*

Poster Competition and morning/afternoon breaks will take place in the 4th floor hallway.

EIT Building 2nd floor — All rooms have fixed thin clients

Room	Track	Description
219	Track B	Civil, Coastal, Env.
218	Track A	Elec., Comp., HPC
203	Track N	Student
221	Track D/C	Chem. & Petro. Mech. & Aero.

EIT Building 3rd Floor — All rooms have fixed thin clients & projectors unless otherwise indicated

Room	Track	Description
321	Track G/J	Industrial Power & Energy
320	Track E	Systems
319	Track H	Ethics & Eng. Education
323	Track I	Power Systems
324	Track L/M	Big Data & AI HCI & Immersive
325	Track F	Biological & Biomedical

	Track A (Room 218): Electrical and Computer Engineering and HPC - John Daigle (UoM) and John Ball (MSU), Chairs			
	Time	**Topic**	**Presenter**	**Affiliation**
☐	9:00 AM	Roadmap to the next generation of Digital Holographic Microscopes	Ana Doblas	UM
☐	9:30 AM	Concurrent Data Structures for GPU Computing	Byunghyun Jang	UofM
☐	10:00 AM	Numerical Simulation of Fluid Flow in Liquid Argon Time Projection Chamber (LArTPC) Detectors	Shuang Tu	JSU
	10:30 AM	Break		
☐	10:45 AM	CodeChat: design as documentation	Bryan Jones	MSU
☐	11:15 AM	New Insights into Robotics and Autonomous Systems: From Bio-inspired Intelligence to AI and Machine Learning.	Chaomin Luo	MSU
☐	11:45 AM	INTERNET OF NETWORKED BUILDINGS SOLUTION FOR SCALABLE AGILE MICROGRIDS	Manohar Chamana	TTU
	12:15 PM	Lunch		
☐	1:45 PM	Introduction to Open Radio Access Networks: Part 1	John Daigle	UofM
☐	2:15 PM	Introduction to Open Radio Access Networks: Part 2	John Daigle	UofM
☐	2:45 PM	Data Driven Machine Learning Based Approach for Point-of-Care Health Monitoring Systems	Syed Kamrul Islam	UMo
	3:15 PM	Break		
☐	3:30 PM	Mapping Spiking Neural Networks to Neuromorphic Hardware	Twisha Titirsha	UMo
☐	4:00 PM	Threshold Switching Insulator-Metal Transition Materials-Promises and Challenges	Nazmul Amin	UMo
☐	4:30 PM	Room Level Classification: Using Wifi Fingerprinting and Direction-of-Arrival	Fahmida Islam	MSU
	5:00 PM	Adjourn		

	Track B (Room 219): Civil, Coastal, and Environmental Engineering - Robert Whalin (JSU), Chairs			
	Time	**Topic**	**Presenter**	**Affiliation**
☐	9:00 AM	"Lamar University's Center for Resiliency": A Holistic Approach to Resilience research	Thinesh Selvaratnam	Lamar
☐	9:30 AM	Performance of Light Frame Structures in Hurricanes: Part 1	Vijaya Gopu	ULL
☐	10:00 AM	Performance of Light Frame Structures in Hurricanes: Part 2	Vijaya Gopu	ULL
	10:30 AM	Break		
☐	10:45 AM	Large Eddy Simulation of Hurricane Winds and Its Application in Energy Infrastructure Systems	Chao Sun	LSU
☐	11:15 AM	High-Performance Partially Reduced Graphene Oxide Membranes for Osmotic Power Generation	Zahid Hossain	ASU
☐	11:45 AM	Computational fluid dynamics for wind engineering	Panneer Selvam	UofA
	12:15 PM	Lunch		
☐	1:45 PM	Pile Setup and Aging in High-Capacity Pressure Grouted Helical Piles	Firouz Rosti	McNeese
☐	2:15 PM	Warm Mix Asphalt and its Prospect in Arkansas	Wei Zhao	UALR
☐	2:45 PM	Utilizing Hydrodynamic Numerical Modeling for Emergency Scour Countermeasure Design and Sediment Transport	Donald Hendon	HDR
	3:15 PM	Break		
☐	3:30 PM	Union County Water Conservation Board's development of the Ouachita River as an alternative source of industrial water to conserve the Sparta Aquifer	Robert Reynolds	Self
☐	4:00 PM	Slope Stabilization using Vetiver grass: A Transformative Approach	Sadik Khan	JSU
	4:30 PM	Adjourn		

	Track C (Afternoon - Room 221): Mechanical and Aerospace Engineering - David Huitink (UofA), Chair			
	Time	**Topic**	**Presenter**	**Affiliation**
☐	1:45 PM	Moore's Law: Extension to Exponential Increase in Lifetimes of Interplanetary Spacecraft	Daniel Berleant	UALR
☐	2:15 PM	Atomic Force Microscopy Techniques for Electronic DNA Sequencing	Steve Tung	UofA
☐	2:45 PM	Electrohydrodynamic Printing of Conductive Inks for Flexible Electronics	Yiwei Han	UofM
	3:15 PM	Break		
☐	3:30 PM	Cementation of Particulate Soils on Photovoltaic Cover Glass Materials	Robert Fleming	ASU
☐	4:00 PM	Advancing Integrated Thermal Management Schemes for High Density Power Electronics	David Huitink	UofA
☐	4:30 PM	Energy Retention in the Vibrations of Dipoles of a Crown Glass Surface from a TEM00 CW-Laser Beam	Cristian Bahrim	Lamar
	5:00 PM	Adjourn		

	Track D (Morning - Room 221): Chemical and Petroleum Engineering - Mayank Tyagi (LSU), Chair			
	Time	**Topic**	**Presenter**	**Affiliation**
☐	9:00 AM	Synthesis and characterization of Renewable Carbon Materials for Energy Application: Supercapacitor, Fuel Cells and Batteries	Noureen Siraj	UALR
☐	9:30 AM	Data-driven modeling and machine learning for petroleum engineering applications	Myank Tyagi	LSU
☐	10:00 AM	Modeling of Coupled Physical Processes in Tight Rocks	Femi Olorode	LSU
	10:30 AM	Break		
☐	10:45 AM	Atomically Thin Membranes	Piran Kidambi	VU
☐	11:15 AM	Application of Modeling and Simulation for Building Energy Analysis	Tianxing Cai	Lamar
☐	11:45 AM	Renewable P, N co-doped carbon as anode material for sodium ion batteries (SIBs)	Samantha Macchi	UALR
	12:15 PM	Lunch/Adjourn		

	Track E (Room 320): Systems Engineering - Randy Buchanan (ERDC) and Greg Parnell (UofA), Chairs			
	Time	**Topic**	**Presenter**	**Affiliation**
☐	9:00 AM	Systems Approach for Characterizing and Understanding Large-scale Additive Manufacturing Process	James Stinson	ERDC
☐	9:30 AM	Feasibility of AI-Driven Autonomous Systems for Target Detection in Operational Environment in Army Missions	Daniel Pham	UAH
☐	10:00 AM	A Study of Drone-based Explainable AI for Enhanced Human-AI Trust and Informed Decision Making in Human-AI Interactive Virtual Environments	Joseph Schwalb	UAH
	10:30 AM	Break		
☐	10:45 AM	Integration of Weather and Traffic Data Analytics for Installation Decision Dashboards	John Richards	ERDC
☐	11:15 AM	GOMS Analsis of Virtual Reality Menu Designs	Emily Wall	MSU
☐	11:45 AM	Augmenting Military Wargaming with Deep Reinforcement Learning	William Leonard	ERDC
	12:15 PM	Lunch		
☐	1:45 PM	Forecasting Melt Pool Temperature Distribution in an Additive Manufacturing Process via Tensor Rank Decomposition and Ensemble Learning	Jonathan Storey	MSU
☐	2:15 PM	A Manufacturability Assessment Framework Using a Rule-based Expert System	Larry Dalton	MSU
☐	2:45 PM	Smart Base Installations: Bayesian Network for Decision Analysis to Support the Decision-Making Process During Severe Weather Events	Greg Parnell	UofA
	3:15 PM	Break		
☐	3:30 PM	Roadway Crash Trend Analysis with Innovative Trend Analysis and Mann-Kendall Test	Ahmed Hossain	ULL
	4:00 PM	Adjourn		

	Track F (Room 325): Biological and Biomedical Engineering - Jorge Almodovar (UofA), Chair			
	Time	**Topic**	**Presenter**	**Affiliation**
☐	9:00 AM	Cell-free biomanufacturing: Thinking outside the cell	Yongchan Kwon	LSU
☐	9:30 AM	Biological Engineering for Nature-based Climate Solutions	Benjamin Runkle	UofA
☐	10:00 AM	MULTILAYERED POLYMERIC COATINGS ENHANCE THE IMMUNOMODULATORY FUNCTION OF MESENCHYMAL STROMAL CELLS	Jorge Almodovar	UofA
	10:30 AM	Break		
☐	10:45 AM	Ultrasound in Cartilage Tissue Engineering: Modelling Analysis and Experimental Verification	Anu Subramanian	UAH
☐	11:15 AM	Investigating Mechanisms of Cytoskeletal Ensemble Synergy Using Optical Tweezers	Nikki Reinemann	UofM
☐	11:45 AM	Utilizing Near-Field Electrospinning to Design Next Generation Vascular Regeneration Grafts to Promote *In Situ* Regeneration	Gary Bowlin	UM
	12:15 PM	Lunch		
☐	1:45 PM	Investigating Manuka Honey Inspired Therapeutics for Prevention of Neutrophil-Induced Fibrosis of Biomaterials	Evan Main	UM
	2:15 PM	Adjourn		

	Track G (Morning - Room 321): Industrial Engineering - Sandra Eksioglu (UofA), Chair			
	Time	**Topic**	**Presenter**	**Affiliation**
☐	9:00 AM	Using Data Analytics for Telehealth Utilization	Betul Cengil	UofA
☐	9:30 AM	Using Data Analytics to Understand COVID-19 Vaccine Hesitancy in USA	Hieu Bui	UofA
☐	10:00 AM	Understanding adaptive human behavior in embodied human-computer interaction (eHCI) systems	Katie Jurewicz	OSU
	10:30 AM	Break		
☐	10:45 AM	TBA	Erin Hills	ArcBest
	11:15 PM	Adjourn		

	Track H (Room 319): Ethics and Engineering Education -Silke Spiesshoefer (UofA), Chair			
	Time	**Topic**	**Presenter**	**Affiliation**
☐	9:00 AM	Affirmative Scientific Support for Scholars in Energy Technologies (ASSSET)	Farzad Ferdowsi	ULL
☐	9:30 AM	COVID-19 Pandemic Impact on Engineering Education Methodology	Silke Spiesshoefer	UofA
☐	10:00 AM	Engaged and Active Learning Through Collaborative Online Lab Experiences	Selahattin Sayil	Lamar
	10:30 AM	Break		
	12:15 PM	Lunch		
☐	1:45 PM	Ethics	Keith Robinson	UALR
☐	2:15 PM	Ethics	Keith Robinson	UALR
☐	2:45 PM	Ethics	Keith Robinson	UALR
	3:15 PM	Break		
☐	3:30 PM	Ethics	Keith Robinson	UALR
	4:00 PM	Adjourn		

	Track I (Room 323): Power Systems - Juan Balda (UofA), Chair			
	Time	**Topic**	**Presenter**	**Affiliation**
☐	9:00 AM	Short-Term Electricity Price Point and Probabilistic Forecasts	Yong Fu	MSU
☐	9:30 AM	DERMS (Distributed Energy Resource Management System)	Chris Long	AEP-SWEPCO
☐	10:00 AM	SPP Grid Strength Assessment	Doug Bowman	SPP
	10:30 AM	Break		
☐	10:45 AM	Artificial Intelligence Methods for Transmission Line Fault Detection, Classification and Localization	Roy McCann	UofA
☐	11:15 AM	Power System Decarbonization	Jian Shi	UH
☐	11:45 AM	Real-Time Stability Assessment in SST-Based Microgrids	Farzad Ferdowsi	ULL
	12:15 PM	Lunch		
☐	1:45 PM	Two types of cap banks and protection schemes	Simon Bian	Entergy
☐	2:15 PM	Design of High-Frequency Transformers	Juan Balda	UofA
☐	2:45 PM	Experimental Results of Traveling-Wave-Fault-Locator Testing	Prashanna Bhattarai	LA Tech
	3:15 PM	Break		
☐	3:30 PM	Design and Analysis of a Time-Domain Incremental Quantity Distance Element in EMTP	Toby Russell	Self
	4:00 PM	Adjourn		

	Track J (Afternoon - Room 321): Power and Energy – Alan Mantooth (UofA), Chair			
	Time	**Topic**	**Presenter**	**Affiliation**
☐	1:45 PM	Biomass Thermochemical Conversion - Catalytic Pyrolysis	Ashokkumar Misarilal Sharma	UALR
☐	2:15 PM	Renewable energy and evolving electric power landscape	Rajesh Sharma	ASU
☐	2:45 PM	Mitigating Adverse Impacts of Increased EV Charging on Distribution Transformers	Masoud Kairimi	MSU
	3:15 PM	Adjourn		

	Track K (Room 417): Cyber Security - Chris Farnell (UofA), Chair			
	Time	**Topic**	**Presenter**	**Affiliation**
☐	9:00 AM	Achieving Cyber Secure Inverter Based Generation	Alan Mantooth	UofA
☐	9:30 AM	Combating Socio-Cognitive Security Threats: Challenges and Technological Solutions	Nitin Agarwal	UALR
☐	10:00 AM	Understanding the Purdue Model for securing OT Networks	William Cox	USAF
	10:30 AM	Break		
☐	10:45 AM	Hack-Proof Flash Storage for Ensuring Security and End-User Privacy	Biswajit Ray	UAH
☐	11:15 AM	Truth and Deceit in Multimedia and Social Media	Andrew Sung	USM
☐	11:45 AM	AI-Enabled Analysis and Decision Making for Automating Vulnerability and Patch Management	Qinghua Li	UofA
	12:15 PM	Lunch		
☐	1:45 PM	Cybersecurity Overview of Distributed Energy Resources and Industrial Control Systems	Chris Farnell	UofA
☐	2:15 PM	Non-Intrusive Cybersecurity Threat Sharing	Philip Huff	UALR
☐	2:45 PM	TBA	Uttam Ghosh	MMC
	3:15 PM	Adjourn		

	Track L (Morning - Room 324): Big Data and AI - Henry Chu (ULL), Chair			
	Time	**Topic**	**Presenter**	**Affiliation**
☐	9:00 AM	The Internet of the Connected World	Samee Khan	MSU
☐	9:30 AM	Time Series Prediction by Deep Learning	Henry Chu	ULL
☐	10:00 AM	Transformer Language Model Based Causal Inference	Xiaowei Xu	UALR
	10:30 AM	Break		
☐	10:45 AM	Practical Considerations for AI-Based Image Inspection	Henry Chu	ULL
☐	11:15 AM	Rasterization of Neural Recording using Bresenham's Line Algorithm and Classification based on 2D CNN	Sahaj Patel	UAB
	11:45 AM	Adjourn		

	Track M (Afternoon - Room 324): Human Computer Interaction and Immersive Technologies - Aryabrata Basu (UALR), Chair			
	Time	**Topic**	**Presenter**	**Affiliation**
☐	1:45 PM	Digitalization of Industry Processes via Multiple Modes (e.g. VR/AR, interactive video) and its Application for Training Development for Industry	Emily Wall	MSU
☐	2:15 PM	Augmenting Spatial Orientation of Pilots through Immersive, Peripheral Vision	Eduard Tudoreanu	UALR
☐	2:45 PM	TBA	Khoa Luu	UofA
	3:15 PM	Break		
☐	3:30 PM	Navigating a Maze Differently - A Dissection of Human Spatial Decision Making in Immersive Virtual Reality	Aryabrata Basu	UALR
	4:00 PM	Adjourn		

By signing this form, I affirm that I attended the entire portion of the indicated sessions:

Full Name (Printed): _____   Email address: _____

Signature: _____   Date: _____

A PDH completion certificate will be emailed to the address provided in the AEF-SSCET registration records.

Time	Topic	Presenter	Affiliation
	Track N (Room 203): Student Presentations - Zahid Hossain (ASU) and Farzad Ferdowsi (ULL), Chairs		
9:00 AM	Soil Stabilization with Rice Rusk Ash	Fares Tarhuni	ASU
9:30 AM	Liquefaction Hazard Analysis of Northeast Arkansas	Rupesh Mahat	ASU
10:00 AM	Automatic Safety Diagnosis in Connected Vehicle Environment	Di Wu	JSU
10:30 AM	Break		
10:45 AM	MEC Based Collision Analysis for C-V2X communications	Avijit Sarker	UofM
11:15 AM	Learning to Accelerate Globally Optimal Solutions to the AC Optimal Power Flow Problem	Fatih Cengil	UofA
11:45 AM	Long-term Durability Properties of Concrete Containing Supplementary Cementitious Materials	Abu Sayed Mohammad Akid	ASU
12:15 PM	Lunch		
1:45 PM	Falsified Data Detection for Security Enhancement of Smart Inverters Based on Machine Learning Techniques	Shayan Ebrahimi	ULL
2:15 PM	Investigation of Volt-VAr Control Parameter Settings of Smart Inverters	Safayet Ullah	ULL
2:45 PM	Severity Analysis of Roadway Departure Crashes on Rural Two-lane Highways: Applying Fast and Frugal Tree with Association Rules Mining	Ahmed Hossain	ULL
3:15 PM	Break		
3:30 PM	Post-Natural Disaster Intelligent Energy Management	Samuel Yankson	ULL
4:00 PM	An Enhanced RL-Aided Dual Active Bridge Converter for Electric Vehicle Charger	Maliha Mahazabeen	ULL
4:30 PM	Deep Learning Based Automatic Phase Reconstruction of Holograms Recorded by a Non-Telecentric Digital Holographic Microscope	Shash Patra	UM
5:00 PM	Adjourn		